GOVERNMENT OF INDIA : THE PATENT OFFICE, 214, LOWER CIRCULAR ROAD, CALCUTTA-17.

Specification No. 95074. Application No. 95074, dated 6th August 1964. Complete Specification left on 19th May 1965. (Application Accepted 6th February 1966.)

A NEW DEPOLARISER MIX FOR USE IN ALKALINE PRIMARY CELLS.

PROVISIONAL SPECIFICATION

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RAFI MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTERED BODY INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

The following specification describes the nature of this invention.

This invention relates to improvements in or relating to "a New Depolariser Mix for Use in Alkaline Primary Cells."

Hitherto it has been proposed to use (a) Mercuric Oxide, (b) Manganese Dioxide as depolarisers in alkaline primary cells.

This is open to the objection that (a) is costly and heavy. Being poisonous, it needs extra precautions during making and in disposal of used cells, (b) Not suited for continuous and heavy drains as the voltage falls steadily.

The object of this invention is to obviate these disadvantages by using copper oxide as a depolariser for use in alkaline primary cells.

To these ends, the invention broadly consists in using copper oxide as the depolariser in alkaline primary cells mixed with carbon. Suitable binders are used and pressing and compacting are done in the usual way as is done in primary dry cell manufacture. Cells constructed with this material as cathode and zinc as anode have an open cell voltage of 1.2 V (freshly assembled) and have a very flat discharge curve at 0.9 to 0.8 V depending upon the load.

The following typical examples are given to illustrate the invention :

Example 1

The cell constructed with this depolariser mix is especially suited to power portable electronic equipment, *i.e.*, transistor radio, hearing aid, transmitter, etc. as it is light in weight and has a high performance.

Example 2

In applications where light weight and high performance are required, the cell constructed with this depolariser mix as cathode can be used. In many cases, it can effectively replace mercuric oxide cell on account of its lightness.

Example 3

For intermittent use and in high tension power units (*e.g.*, 90V, 60V, 45V) this cell with the new depolariser can effectively replace the conventional manganese dioxide cell. It has got an added advantage of having a better performance in terms of continuous drain and competitive cost.

The following are among the main advantages of the invention :

1. Low cost : Cheaper than mercuric oxide and competitive to manganese dioxide cells.

2. Light weight : It gives ampere|hour capacity per gram of depolariser. This ensures that the weight of the cell is less—less than one third that of mercuric oxide.

The initial and end products of the cell are non-poisonous and so there is no danger of mercurial poisoning to workers during the manufacture and in disposal of spent cells.

4. Since the end product is a solid, it is particularly suited for layer type high voltage units.

5. Cells constructed with this depolariser mix can be used in places where lightness and low cost are considerations, *e.g.*, portable solid state devices, hearing aids.

R. BHASKAR PAI

Patents Officer,

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

Dated this 21st day of July 1964.

COMPLETE SPECIFICATION

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RAFI MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTERED BODY INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

The following specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed.

This is an invention by Dr. MICHAEL ANGELO VINCENT DEVANATHAN, Scientist, Central Electrochemical Research Institute, Karaikudi, Madras State, India, Ceylon citizen, NARAYANAN RAMASAMY, Senior Scientific Assistant, Central Electro-chemical Research Institute, Karaikudi, Madras State, India, Indian citizen and SRINIVASAN VENKATESAN, Senior Laboratory Assistant, Central Electro-chemical Research Institute, Karaikudi, Madras State, India, Indian citizen.

This invention relates to improvements in or relating to a New Depolariser Mix for Use in Alkaline Primary Cells.

Hitherto it has been proposed to use (a) Mercuric Oxide, (b) Manganese Dioxide as depolariser in alkaline primary cells.

This is open to the objection that (a) is costly and heavy. Being poisonous, it needs extra precautions during making and in disposal of used cells, (b) Not suited for continuous and heavy drains as the voltage falls steadily.

The object of this invention is to obviate these disadvantages by using copper oxide as a depolariser for use in alkaline primary cells.

To these ends, the invention broadly consists in using copper oxide as the depolariser in alkaline primary cells mixed with carbon. Suitable binders are used and pressing and compacting are done in the usual way as is done in primary dry cell manufacture. Cells constructed with this material as cathode and zinc as anode has an open cell voltage of 1.2V (Freshly assembled) and has a very flat discharge curve at 0.9 to 0.8V depending upon the load.

The following typical examples are given to illustrate the invention :

Example 1

The cell constructed with this depolariser mix is especially suited to power portable electronic equipment, *i.e.*, transistor radio, hearing aid, transmitter, etc. as it is light in weight and has a high performance.

Example 2

In applications where light weight and high performance are required, the cell constructed with this depolariser mix as cathode can be used. In many cases, it can effectively replace mercuric oxide cell on account of its lightness.

Example 3

For intermittent use and in high tension power units (*e.g.*, 90V, 60V, 45V) this cell with the new depolariser can

effectively replace the conventional manganese dioxide cell. It has got an added advantage of having a better performance in terms of continuous drain and competitive cost.

The following are among the main advantages of the invention :

1. Low cost : Cheaper than mercuric oxide and competitive to manganese dioxide cells.

2. Light weight : It gives ampere|hour capacity per gram of depolariser. This ensures that the weight of the cell is less—less than one third that of mercuric oxide.

3. The initial and end products of the cell are non-poisonous and so there is no danger of mercurial poisoning to workers during the manufacture and in disposal of spent cells.

4. Since the end product is a solid, it is particularly suited for layer type high voltage units.

5. Cells constructed with this depolariser mix can be used in places where lightness and low cost are considerations, *e.g.*, portable solid state devices, hearing aids, etc.

We claim :

1. A new depolariser mix for use in alkaline primary cells which consists in using copper oxide as the depolariser in alkaline primary cells mixed with carbon.

2. A depolariser mix for use in alkaline primary cells as claimed in Claim 1 wherein suitable binders are used and pressing and compacting are done in the usual way as is done in primary dry cell manufacture.

3. As in Claims 1 and 2 wherein cells are constructed with the material as cathode and zinc as anode for obtaining an open cell voltage $\angle$1.2V (freshly assembled) and a very flat discharge curve at 0.9 to 0.8V depending upon the load.

4. A new depolariser mix for use in alkaline primary cells substantially as herein before described.

R. BHASKAR PAI

Patents Officer,

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

Dated this 30th day of April 1965.

MGIP Sant.—SL—16 Patent/66—19-5-67—100.